



**Linda S. Adams**  
Secretary for

*Environmental Protection*

# Air Resources Board

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**Mary D. Nichols, Chairman**  
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Sacramento, California 95812 • [www.arb.ca.gov](http://www.arb.ca.gov)



**Arnold Schwarzenegger**  
Governor

February 25, 2010

Mr. Wilson Chu  
Marketing and New Business Manager  
Johnson Matthey  
Diesel Emission Control Systems  
400 Lapp Road  
Malvern, Pennsylvania 19355

Dear Mr. Chu:

The Air Resources Board (ARB) has reviewed the Johnson Matthey Inc. application for the verification of the CRT(+) diesel particulate filter (DPF). Based on the evaluation of the data provided, the ARB hereby verifies that the CRT(+) DPF reduces emissions of diesel particulate matter (PM) by 85 percent or greater and does not increase nitrogen dioxide (NO<sub>2</sub>) emissions beyond the 2009 limit of 20 percent of the baseline oxides of nitrogen (NO<sub>x</sub>) emissions (Level 3 Plus) when in use in stationary emergency standby (E/S) and prime generators powered by Tier 1, Tier 2, or Tier 3 certified off-road engines meeting 0.2 grams per brake horse power hour (g/bhp-hr) diesel PM or less based on certification or in-use emissions testing. The executive order (EO DE-08-009-01) for the CRT(+) DPF, including a list of the applicable engine families is enclosed.

The required emissions and durability testing of the CRT(+) DPF were performed per the 1004 hours of the testing protocol entitled "CRT(+) Verification Application 6-23-09.pdf," as approved by ARB. As a part of the required testing, 1004 hours of durability testing, including 144 cold starts, were completed on the system without a reduction in the effectiveness of the system, making the system eligible for stationary emergency standby and prime verification.

Since the durability testing performed to date is more than the 1000 hours required for verification for stationary emergency standby and prime generator application, the CRT(+) DPF is, therefore, granted verification as a Level 3 Plus diesel emission control device for stationary emergency standby and prime generators powered by Tier 1, Tier 2, or Tier 3 certified off-road engines meeting 0.2 g/bhp-hr diesel PM or less based on certification or in-use emissions testing.

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Website: <http://www.arb.ca.gov>.*

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California Environmental Protection Agency

The verification is valid provided the following operating criteria are met:

<b>Parameter</b>	<b>Value</b>
Application	Stationary Emergency Standby and Prime Power Generation
Engine Type	Diesel, with or without turbocharger, without exhaust gas recirculation (EGR), mechanically or electronically controlled, Tier 1, Tier 2, or Tier 3 certified off-road engines meeting 0.2 g/bhp-hr diesel PM or less based on certification or in-use emissions testing.
Minimum Exhaust Temperature for Filter Regeneration	The engine must operate at the load level required to achieve 240 degrees Celsius (°C) for a minimum of 40 percent of the engine's operating time and an oxides of nitrogen (NOx)/PM ratio of 15 @ ≥ 300°C and 20 @ ≤ 300°C. Operation at lower temperatures is allowed, but only for a limited duration as specified below.
Maximum Consecutive Minutes Operating Below Passive Regeneration Temperature	720 minutes
NOx/PM Ratio Requirements	NOx/PM ratio of at least 8 with a preference for 20 or higher.
Number of Consecutive Cold Starts and 30 Minute Idle Sessions before Regeneration Required	24
Number of Months of Operation Before Cleaning of Filter Required	6 to 12 depending on hours of operation, maintenance practice, and oil used.
Fuel	California diesel fuel with less than or equal to 15 ppm sulfur or a biodiesel blend provided that the biodiesel portion of the blend complies with ASTM D6751, the diesel portion of the blend complies with Title 13 (CCR), sections 2281 and 2282, and the blend contains no more than 20 percent biodiesel by volume. Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.
Verification Level	Level 3 Plus Verification: <ul style="list-style-type: none"> <li>• PM - at least 85% reduction</li> <li>• NO<sub>2</sub> - meets January 2009 limit</li> </ul>

Mr. Wilson Chu  
March XX, 2010  
Page 3

Since there may be significant variations from application to application, Johnson Matthey Inc. must review actual operating conditions (duty cycle, baseline emissions, exhaust temperature profiles, and engine backpressure) prior to retrofitting an engine with an CRT(+) DPF to ensure compatibility. The product must not be used with any other systems or engine modifications without ARB and manufacturer written approval. Johnson Matthey Inc. must ensure that the installation of the CRT(+) DPF system conforms to all applicable industrial safety requirements.

Furthermore, the engine on which the CRT(+) DPF is installed should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer. Johnson Matthey Inc. must install the CRTdm monitoring device, or equivalent, backpressure monitor on all engines retrofitted with an CRT(+) DPF.

ARB hereby assigns the CRT(+) DPF the designated family name of:

**CA/JMI/2008/PM3+/N00/ST/DPF01**

This identification number should be used in reference to this verification as part of the system labeling requirement. Labels attached to the CRT(+) DPF and the engine must be identical.

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, Johnson Matthey Inc. is responsible for record keeping requirements (section 2702), honoring their warranty (section 2707), and conducting in-use compliance testing (section 2709).

A copy of the Executive Order must be provided to the ultimate purchaser at the time of sale.

Should you have any questions or comments, please contact Mr. John Lee, Air Resources Engineer, at (916) 327-5975 or Mr. Kirk Rosenkranz, Air Pollution Specialist, at (916) 327-7843.

Sincerely,

/s/

Daniel E. Donohoue, Chief  
Emissions Assessment Branch

Enclosure